DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 70.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-002300
Date Inspected: 18-Dec-2007

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Japan Steel Works

OSM Arrival Time: 830
OSM Departure Time: 1930
Location: Muroran, Japan

CWI Name:	Chung Kuan/ Makhmud Ashadi			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☐ Yes	☑ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☐ Yes	☑ No	☐ N/A	**Approved WPS:**	☐ Yes	☑ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: PQR test plate

Summary of Items Observed:

PQR qualification welding test (3G):

Caltrans Quality Assurance Inspector (QAI) representative Mr. Wai Pau, travel to Japan Steel Works (JSW) Muroran plant to witness an AWS D1.5 standard PQR qualification welding test. The number of PQR qualification welding test is SJ-2942-WP-2. This PQR welding process test is continuing from yesterday 1-17-08. The PQR qualification tests utilizing the Shielded Metal Arc Welding (SMAW) process were conducted by welder Mr. Kai Nakasato performed in the uphill vertical position (3G) with set the electrode at a 10 degree angle above horizontal line when the welder strike the arc and lift the electrode up. The material used for the PQR qualification test specimens was reported by JSW Welding Engineer Mr. Takaaki Maruya as ASTM A148 Gr.620-415 (casting) and ASTM A709-HPS-485WT (plate) both having a wall thickness measurement of 50mm. The weld joint design used butt joint, single-V-groove weld with 20mm x 75mm backing bar. The filler metal used in the test is Hoballoy 9018-M with 4mm diameter electrode, made by Hobart Brothers, USA. The electrode certification is 30H438.

During welding, the CWI Mr. Chung Kuan and Caltrans QAI observed a numerous number of small with uniform size porosity bubbles indicated on the filler metal surface after grinding process for pre-welding. Caltrans QAI requested the welder to remove additional filler metal about 3mm deeper and found the porosity continued throughout the weld metal deposit. Caltrans QAI informed JSW Welding Engineer Mr. Takaaki Maruya as the visual inspection results indicated porosity still exists deep inside the weld. The reason may be from picking up moisture while carbon dioxide generated during welding creates porosity and effervescent effect that encourages porosities diffuse all over weld pool. JSW is necessary to understand the real cause and look at the way strike electrode as well. The PQR welding test has been stop by JSW Welding Engineer Mr. Takaaki Maruya and set a meeting at 1300pm to discuss the porosity problem.

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During 1300 meeting, JSW's Mr. Teruo Shibuya informed Caltrans QAI that porosities was found on the test plate it is difficult to establish why this occurs at this time. First, the welder will compete the welding on the grounded area. Then, the test plate will be evaluated by radiographic testing (RT) tonight and JSW will research the technical information regard the plate material and electrode prior to continuing the PQR welding. Also, JSW set up a 0900 meeting on Saturday, 1-19-08 to discuss their findings of the RT test result.

Summary of Conversations:

As Note within the report above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Venkatesh Iyer (858)697-6363, who represents the Office of Structural Materials for your project.

Inspected By:	Pau,Wai	Quality Assurance Inspector
Reviewed By:	Brasel,Ron	QA Reviewer